

Remarks/Arguments:

Applicant thanks Examiner Johnson for his clear explanation of the claim rejections and his response to applicant's argument filed June 16, 2005. In response to the Office action of July 8, 2005, applicant amends the claims to overcome the 102 rejection:

Claim 12

Claim 12, as amended, describes a solder joint that requires a copper connection sites of which the top surface is substantially free of solder material; a nickel layer that is in contact with the top surface of the site; a copper layer atop and in contact with the nickel layer; and a solder ball that is in contact with the copper layer; and a bond between the solder ball and the copper layer.

The Brofman patent concerns with a solder element that is coated with copper and nickel and contacted to a pad with additional solder; it does not disclose a copper connection site with a solder free top surface and it does not disclose a nickel layer that is in contact with the solder free top surface. Because the Brofman patent lacks the elements in claim 12, it does not anticipate claim 12; and claim 12 stands patentable over the Brofman patent.

Claim 20

Claim 20, as amended, describes a BGA device that requires a substrate with a plurality of metallized connection sites. It further requires that each site have a solder free, flat top surface; a nickel layer that is in contact with the top surface; a copper layer atop and in contact with the nickel layer; a solder ball in contact with the copper layer; and a bond between the solder ball and the copper layer.

The Brofman patent concerns with a solder element that is coated with copper and nickel and contacted to a pad with additional solder; it does not disclose a metallized connection site with a flat, solder free top surface and it does not disclose a nickel layer that is in contact with the solder free top surface. Because the Brofman patent lacks the elements in claim 20, it does not anticipate claim 20; and claim 20 stands patentable over the Brofman patent.

Claims 13-19

Claim 13-19 properly depend from claim 12 and stand patentable by virtue of their dependency.

Claim 21-27

Claim 21-27 properly depend from claim 20 and stand patentable by virtue of their dependency.

Claim 28

Newly inserted claim 28 describes a semiconductor apparatus that requires a connection site with a metallic and flat top surface that is solder free. It further requires a barrier metal layer over the top surface that is in contact with the metallic top surface and is substantially conforming to the contour of the top surface. It further requires a copper layer that is over and in contact with the barrier metal layer. It further requires a solder ball that is in contact with the copper layer and a bond between the solder ball and the copper layer.

Claim 28 distinguishes over the Brofman patent because Brofman patent does not disclose all the elements in claim 28.

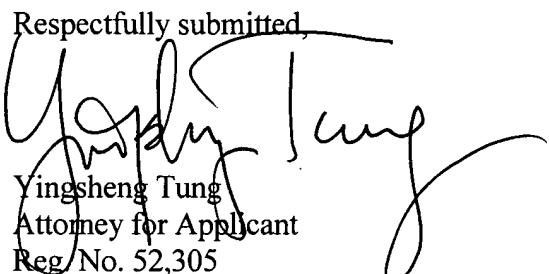
Claims 29-31

Claims 29-31 properly depend from claim 31.

In summary, applicant respectfully submits that this application is now in allowable form and all pending claims distinguish from and stand patentable over the Brofman patent. Applicant respectfully requests further examination of this application and timely allowance of all pending claims.

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Respectfully submitted,


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